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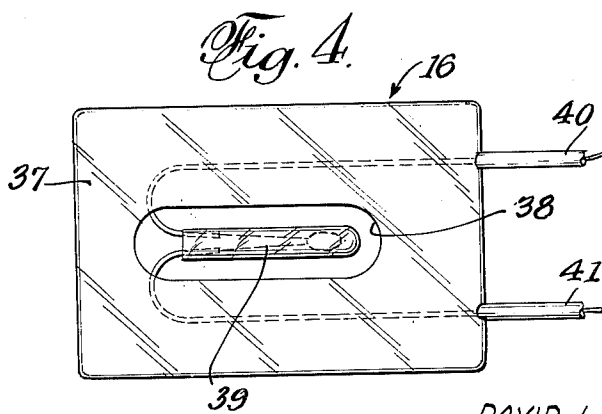
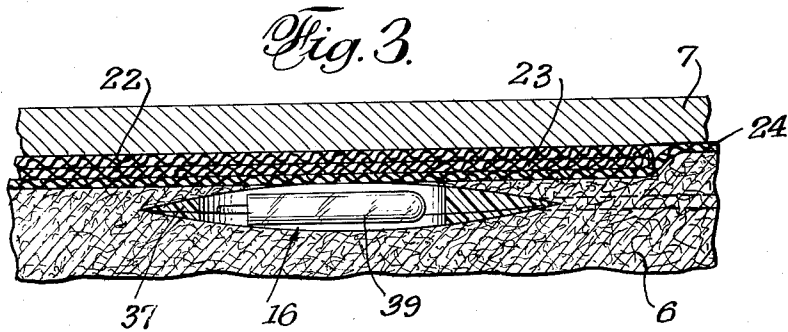
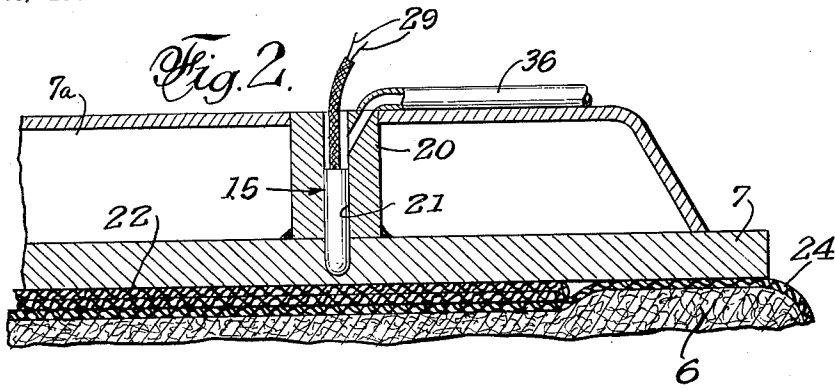
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QUALITY CONTROL PRESS RELEASE MEANS

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2 Sheets-Sheet 2



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**QUALITY CONTROL PRESS RELEASE MEANS**

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This invention relates to a press with means to control its pressing time and operation, and has for an object to stop the pressing operation when the fabric being pressed reaches a pre-set temperature that indicates an absence of moisture therein. Thus, the invention is characterized by means that controls the quality of the pressing operation and also insures against fabric scorching.

Ideal pressing temperatures of different fabric vary according to the amount of moisture contained in the fabric being pressed. This temperature is difficult to pre-set if dependent on the heat of the pressing buck, head, or both. However, if the optimum pressing temperature of a fabric item is known, the same can be used to release the press when it is reached, thereby insuring uniformity of quality regardless that the moisture content of some of the items of a run thereof is different than the content of others in said run. The present invention contemplates means that responds to the optimum temperature of the fabric and not of the pressing components to release the press and stop the pressing operation.

Either laundry or dry cleaning types of presses, presses used by clothing manufacturers, or shirt and pants pressing machines may form the basis on which the present invention may be applied.

Another object of the invention is to provide, in means as above characterized, means to cool a sensor device that responds to the temperature of the item being pressed to re-set the control means quickly enough for economical operation.

This invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom; economical of manufacture, relatively simple, and of general superiority and serviceability.

The above objects are realized in a release means that comprises an amplifier-relay type of controller that responds to changes in the electrical resistance of a thermistor that is embodied either in the head or the buck of a pressing machine in such position as to be operatively affected by the temperature of an item pressed, and means operated by said controller to automatically open the press and/or stop the pressing operation when the optimum temperature in said item is reached. In cases where a large number of successive pressing operations is to be performed, the spacing of the operations should rather be controlled by the time needed to dress the buck than the time required for the sensor to cool sufficiently and re-set for the next operation. The present invention includes means to cause the sensor to cool with sufficient rapidity to enable desired economically satisfactory pressing operations of a succession of items.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description, and which is based on the accompanying drawings. However, said drawings merely show, the following description merely describes, preferred embodiments of the present invention, which are given by way of illustration or example only.

In the drawings, like reference characters designate similar parts in the several views.

FIG. 1 is a schematic view showing the present quality control means connected to and combined with a pressing machine.

FIG. 1a is a diagrammatic view of an amplifier-relay type controller shown schematically in FIG. 1.

FIG. 2 is an enlarged and fragmentary sectional view showing a sensor or thermistor, as used in the invention and applied to the head of a pressing machine.

FIG. 3 is a similar view showing a sensor or thermistor as applied to the buck of a pressing machine.

FIG. 4 is a plan view of the sensor shown in FIG. 3.

The drawings show a pressing machine 5 provided with a fixed buck 6, a press head 7, an arm 8 mounting said head on a pivot 9 on the press frame 10, and an extensible air cylinder 11 that is so connected to said arm 8 as to swing the latter in a direction to lower the head 7 over the buck 6 upon extension of said cylinder, and to swing the arm 8 in a direction to raise the head upon contraction of said cylinder. The press head 7 is shown with a heating steam chest 7a, but may be heated in other ways common to pressing machines.

The above, generally conventionally, includes spring means 8a that biases the arm 8 to buck-raising position and a device 12 that controls flow of compressed air to the cylinder 11 to cause the same to extend and close the press. The press includes means to release the device 12 to vent, thereby relieving pressure in the cylinder and allowing the spring means 8a to open the press. Whether such conventional means or other comparable means is used, is not material to the invention, since the device 12 and the cylinder 11 are so interrelated that the former controls the raising or lowering operations of the press head under control of a temperature-actuated means.

The present invention comprises, generally, a sensor or thermistor 15 mounted in the head 7 or a sensor or thermistor 16 mounted in the buck 6, and control means 17 in electric circuit between the thermistor 15 or 16 and the device 12 to cause the latter to control air flow to the cylinder 11.

The sensor or thermistor 15 is in the form of an elongated member that is housed in a metal holder 20 that is welded as an upper extension of the head 7. The seat 21 in which the thermistor is housed is closely spaced from the pressing surface 22 of said head so as to be sensitive to the heat at said surface and, therefore, to the heat of an item 23 that is pressed between head 7 and the Nomex buck cover 24 of the resilient or padded buck 6.

The item 23 may comprise a variety of garments or parts thereof, the same, in this case, being wet to varying degrees as may be due to mass washing prior to pressing. The item may be single or double ply. Assuming the same to be a pants leg, it would comprise two plies or lays of wet material which, when pressed, dry under pressing heat. It will be clear that ordinarily the item is satisfactorily pressed when fully dry and will invite scorching only if the pressing time is continued beyond this point. A too short pressing time may not produce a satisfactory result. This invention contemplates termination of the pressing operation at a predetermined temperature at which the item is properly pressed even though the pressing time may vary.

The thermistor 15 comprises a temperature-sensing device that has nominal ohmage that covers a temperature range of 150° to 375° F. The range may be wider, but may be adequately covered by a thermistor having a mean or mid-point resistance of 5000 to 5600 ohms, and having a nominal differential of about 18.5 ohms or 1.1° F.

As shown in FIG. 1a, the thermistor 15 is incorporated in a bridge circuit 25 in balance with a reference resistance 26 of the same ohmage, said circuit being across the low voltage power output of the secondary 27 of a power transformer 28. The conductors 29 (FIG. 1) connect the thermistor to a D.C. amplifier 30 of the control means 17 and the latter, in turn, is connected to relay 31 by

conductors 32. A switch 33, controlled by said relay, closes a line circuit 34 to a solenoid 35 that opens the device 12 to allow pressure to release from cylinder 11.

Except that the thermistor resistance is increased to 5600 ohms, the control amplifier 17 is similar to a transistorized amplifier relay marketed under the name Vera-Tran by Honeywell of Minneapolis, Minnesota.

It will be understood that, with the head 7 in pressing engagement with the item 23, the thermistor resistance decreases until it reaches a value corresponding to the optimum temperature desired and which may be set on the calibrated knob 35a. When the garment item 23 reaches this temperature and the resistance of the thermistor is lowest, the relay 31, by way of the amplifier 30, is energized, closing the switch 33.

If the thermistor tip is close to the pressing surface, as above described, the coolness of the wet item 23 will be transmitted to said surface and cause a raising of the mentioned low resistance of the thermistor. Thus, the controller amplifier will re-set automatically. This would entail delaying the release circuit so the head would stay down. Thus, if the item 23 is engaged by a heat having a temperature of 300° F., the head temperature will be lowered materially or to a point about 275° F. By setting the controller amplifier to re-set at 285° F., there will be a range sufficient for the same to set and re-set as desired. Then, when the item temperature next reaches 300° F., the device 12 will be actuated to release the press head.

It will be seen that reliance is placed on the wet, cool item 23 to cause the thermistor to re-set, since the low temperature it causes is several degrees below that necessary to cause release of energy in the amplifier. Another way of lowering the temperature of the thermistor 15 so that it will re-set so as to be ready for the next pressing operation, is to cool the same as by compressed air which may come from any suitably filtered source and advantageously comprise the air vented from the device 12 when the same has been actuated to press-release condition. A line 36 (FIGS. 1 and 2) indicates that such a cooling medium is conducted to the vicinity of the thermistor.

The thermistor 16 is connected in the same way as the thermistor 15 to control amplifier 17. By placing the thermistor under the Nomex buck cover 24, the same is subject to the temperature transmitted by the item 23 being pressed and is remote from the press head 7. This thermistor comprises a flat holder 37 of Teflon or other plastic material that does not become heat-saturated as metal would. Rulon is another such plastic. Said holder has a central opening 38 in which a thermistor bead 39 is located and spaced from the holder. Conductors 40 and 41 extend from an end of the bead 39 and are sandwiched between two fused plies of the holder, as suggested in FIG. 3. Said conductors 40 and 41 have the conductors 29 as their extensions.

The space or opening 38 traps the heat transmitted from the head 7, the same surrounding the bead 39 for maximum effect. When the head is raised, this trapped heated air is dissipated through the interstices of the cover 24, exposing the thermistor to hastened cooling and effecting a more rapid re-set of the amplifier after each lay of a garment. Practice has demonstrated that re-set is had within ten seconds and frequently around five seconds.

While the foregoing has illustrated and described what is now contemplated to be the best mode of carrying out the invention, the constructions are, of course, subject to modification without departing from the spirit and scope of the invention. It is, therefore, not desired to restrict the invention to the particular forms of construction illustrated and described, but to cover all modifications that may fall within the scope of the appended claims.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. Quality control press release means comprising, in combination with a press having pressing members comprising a buck and a press head, the latter being mounted to move between pressing engagement with the buck and under spring bias to raised position spaced from the buck:

(a) a thermistor located in one of said pressing members in close adjacency to the pressing surfaces between the buck and head to be subjected to decrease in the electrical resistance thereof as an item being pressed between said surfaces increases in temperature,

(b) means to hold the head in pressing engagement with the buck against said spring bias, and

(c) electrical control means energized by increase in current therein and connected and responsive to decreased resistance of the thermistor to operate the head-holding means to head-releasing condition upon the temperature of said item being increased to a predetermined level, thereby enabling the head to open under said spring bias.

2. Quality control press release means according to claim 1 in which the control means embodies ohmage-adjusting means to cause said means to energize in a temperature range of the item being pressed of 150° to 375° F.

3. Quality control press release means according to claim 1 in which the thermistor is embodied in the press head with an end thereof closely spaced from the pressing surface of said head.

4. Quality control press release means according to claim 1 in which the buck is formed as a padded body with a fabric cover, and the thermistor is incorporated in said body immediately beneath said cover.

5. Quality control press release means according to claim 1 in which means is provided to cool the thermistor after the head is raised to non-pressing position to cause rapid raising of the resistance in the thermistor.

6. Quality control press release means according to claim 1 in which the head-holding means comprises:

(a) an extensible air cylinder connected to the head, (b) a device to control flow of compressed air to said cylinder to extend the same and move the press head to pressing engagement with the buck,

(c) the device having an air exhaust that opens to vent the device and the air cylinder, the mentioned spring bias being operative to contract the vented cylinder and cause the press head to open, and

(d) means to conduct air from said exhaust to contact, and, thereby cool the thermistor when the head is opened.

7. In a quality control press release, the combination with the two separable pressing members of a pressing machine of

(a) a thermistor located in one of the two pressing members,

(b) said thermistor being responsive to increase of temperature of an item pressed between said members to vary its electrical resistance, and

(c) means responsive to such change in resistance of the thermistor to separate the pressing members when the temperature level of said item is in the range of 150° to 375° F.

8. In a quality control press release, the combination with the two separable pressing members of a pressing machine of

(a) a thermistor located in one of the two pressing members,

(b) said thermistor being responsive to increase of temperature of an item pressed between said members to vary its electrical resistance,

(c) means responsive to such change in resistance of the thermistor to separate the pressing members when the temperature level of said item is in the range of 150° to 375° F., and

(d) means to cool the thermistor after the pressing

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members have been separated to cause lowering of the resistance of the thermistor preparatory to the next pressing operation.

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